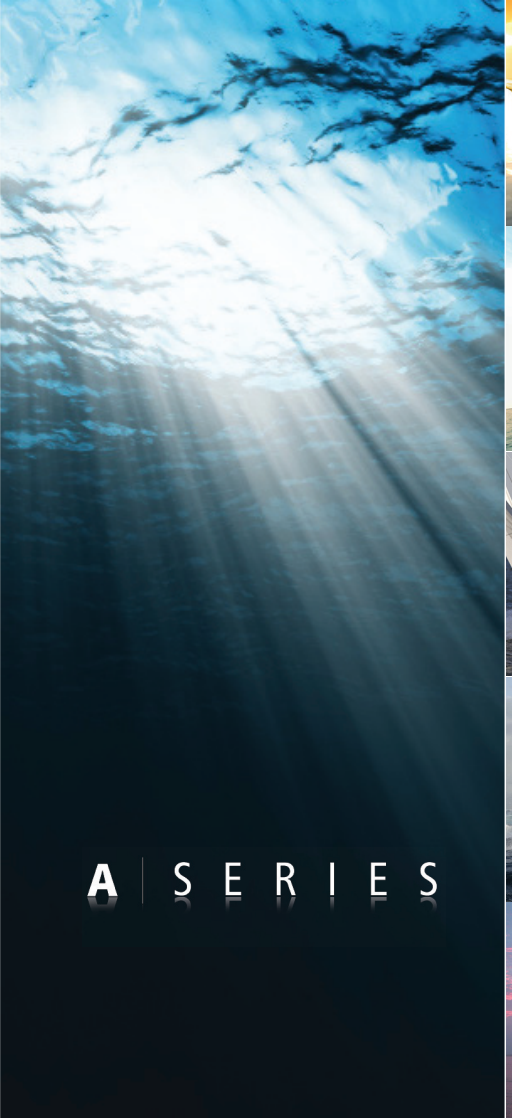


# A-Series
# Multi-function display

Installation instructions

A50, A50D, A57D, A70 and A70D models

Raymarine®

**Trademarks and registered trademarks**

Autohelm, HSB, RayTech Navigator, Sail Pilot, SeaTalk and Sportpilot are UK registered trademarks of Raymarine UK Limited. Pathfinder and Raymarine are UK registered trademarks of Raymarine Holdings Limited. 45STV, 60STV, AST, Autoadapt, Auto GST, AutoSeastate, AutoTrim, Bidata, G-Series, HDFI, LifeTag, Marine Intelligence, Maxiview, On Board, Raychart, Raynav, Raypilot, RayTalk, Raystar, ST40, ST60+, Seaclutter, Smart Route, Tridata and Waypoint Navigation are trademarks of Raymarine UK Limited.

All other product names are trademarks or registered trademarks of their respective owners.

**© Raymarine UK Ltd. 2008**

**Document number: 87102-1**
Date: August 2008

# Contents


**Important information ..... 5**

Warnings and Cautions ..... 5
TFT LCD displays ..... 6
Water ingress ..... 6
Disclaimers ..... 6
EMC installation guidelines ..... 7
Declaration of conformity ..... 8
Product disposal ..... 8
Warranty ..... 8
About this manual ..... 8

**Chapter 2:Planning the installation ..... 11**

Handbook information ..... 12
Installation overview ..... 13
A-Series systems ..... 13
Core system ..... 13
Extended system ..... 14
Pack contents ..... 16
Tools ..... 17

**Chapter 3:Cables and connections ..... 19**

General wiring instructions ..... 20
Connection overview ..... 21
Power connection ..... 22
Sonar transducer connection ..... 23
NMEA 0183 connections ..... 24
SeaTalk connections ..... 25
External GPS Connection ..... 26
SeaTalk$^{ng}$ connections ..... 26
NMEA 2000 connection ..... 27

**Chapter 4:Location and mounting ..... 29**

Unit dimensions ..... 30
Selecting a location for the unit ..... 31
Bracket mounting ..... 32
Panel mounting ..... 35

**Chapter 5:System checks ..... 37**

Initial power on test ..... 38
External GPS setting ..... 38
GPS Check ..... 39
Transducer check ..... 39
Set the language ..... 40

**Chapter 6:Troubleshooting ..... 41**

Power up ..... 42
GPS ..... 43
Fishfinder / Sonar transducer ..... 44

System data ..... 45

**Chapter 7:Technical support ..... 47**

Raymarine technical support ..... 48

Web ..... 48

Contacting Raymarine in the North America ..... 48

Contacting Raymarine in Europe ..... 49

Navionics contact details ..... 49

Sirius contact details ..... 50

**Chapter 8:Technical Specification ..... 51**

Technical specification ..... 52

Unit dimensions ..... 53

NMEA Messages ..... 54

**Chapter 9:Accessories ..... 55**

Options and accessories ..... 56

Mounting options ..... 56

SeaTalk accessories ..... 56

SeaTalk$^{ng}$ accessories ..... 56

Transducers and associated cables ..... 57

Spare parts ..... 58

# Important information

## Warnings and Cautions

**WARNING: Product installation**

This equipment must be installed in accordance with the Raymarine instructions provided. Failure to do so could result in poor product performance, personal injury, and/or damage to your boat.

**WARNING: Potential ignition sources**

The equipment must NOT be installed in hazardous or flammable atmospheres such as an engine room.

**WARNING: High voltages**

The display unit contains high voltages. DO NOT remove the display unit covers or attempt to service the equipment.

**WARNING: Switch off power supply**

Make sure you have set the boat's power supply to OFF before you start installing this product. Unless otherwise stated connect and disconnect equipment only with the power supply switched OFF.

**WARNING: Grounding**

This display is not intended for use on "positive" ground boats. All power input screens, ground and cable drain wires must be connected directly to the boats ground.

**WARNING: Service and Maintenance**

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Raymarine dealers.
Unauthorized repair may affect your warranty.

**CAUTION: Switch off power supply**

Switch OFF the power supply to the unit before connecting or disconnecting any cables or connections. Failure to do so may cause sparks or result in irreparable damage to the unit.

**CAUTION: Transducer cable**

DO NOT cut, shorten, splice the transducer cable or remove the connector. If the cable is cut, it cannot repaired. Cutting the cable will also void the warranty.

**CAUTION: CompactFlash cards**

When installing CompactFlash cards ensure that the card is fitted the correct way around. DO NOT try to force the card into position as this may result in irreparable damage to the card.
Removing the CompactFlash card while information is being written to or read from it may cause damage to the card and loss of all data.
DO NOT use a metallic instrument such as a screwdriver or pliers to remove a card, as doing this can cause irreparable damage.

**CAUTION: Water ingress**

**To prevent the ingress of water and consequent damage to the display, ensure that the chart card door is firmly closed. This can be confirmed by an audible click.**

**CAUTION: Sun covers**

**To provide protection against the damaging effects of ultra violet (UV) light, use the sun covers when equipment is not in use.**

**CAUTION: Cleaning**

**DO NOT use acid, ammonia based or abrasive products.**
**DO NOT use commercial high pressure washing (jet wash) equipment.**

## TFT LCD displays

The colors of the display may seem to vary when viewed against a colored background or in colored light. This is a perfectly normal effect that can be seen with all color Liquid Crystal Displays (LCDs).

In common with all Thin Film Transistor (TFT) LCD units, the screen may exhibit a few (less than 5) wrongly illuminated pixels. These may appear as black pixels in a light area of the screen or as colored pixels in black areas.

## Water ingress

As it exceeds the water proof rating capacity outlined by standards IPX6, subjecting any Raymarine equipment to commercial high pressure washing equipment may cause water intrusion and subsequent equipment failure. Raymarine will not warrant equipment subjected to high pressure washing.

## Disclaimers

Electronic charts are an aid to navigation designed to facilitate the use of authorized government charts, not to replace them. Only official government charts and notices to mariners contain the current information needed for safe navigation. The Captain is responsible for their prudent use. The A-Series Multifunction Display and its charts do not therefore exclude the user from carrying the required official charts and documents.

Raymarine does not warrant that this product is error-free or that it is compatible with products manufactured by any person or entity other than Raymarine.

This product uses digital chart data, and electronic information from the Global positioning System (GPS) which may contain errors. Raymarine does not warrant the accuracy of such information and you are advised that errors in such information may cause the product to malfunction. Raymarine is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in chart data or information utilized by the product and supplied by third parties.

## Multi-media chart cards

The A-Series Multifunction Display is pre-loaded with Navionics chart data. If you wish to use different chart data, you can insert Navionics chart cards into the CompactFlash card slot on the unit.

When archiving data, Raymarine recommends the use of SanDisk CF memory cards. Other brands of CF memory card may not work in your unit.

## EMC installation guidelines

All Raymarine equipment and accessories are designed to the best industry standards for use in the recreational marine environment.

Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised. Although every effort has been taken to ensure that they will perform under all conditions. It is important to understand what factors could affect the operation of the equipment.

The guidelines given here describe the conditions for optimum EMC performance, but it is recognized that it may not be possible to meet all of these conditions in all situations. To ensure the best possible conditions for EMC performance within the constraints imposed by any location, always ensure the maximum separation possible between different items of electrical equipment.

- Place equipment at least 5ft (1.5 m) from any equipment transmitting or cables carrying radio signals, e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7ft (2 m).
- Place equipment more than 7ft (2 m) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The equipment is supplied from a separate battery from that used for engine start. Voltage drops below 10 V and starter motor transients can cause the equipment to reset. This will not damage the equipment, but may cause the loss of some information and may change the operating mode.
- Cables are not cut or extended unless doing so is detailed in the installation manual.

### Remember

Where constraints on the installation prevent any of the above recommendations:

- Always allow the maximum separation possible between different items of electrical equipment. This will provide the best conditions for EMC performance for the installation.

### Suppression ferrites

Raymarine cables may be fitted with suppression ferrites. These are important for correct EMC performance. Any ferrite removed to facilitate installation must be replaced in the original position immediately installation is complete.

Use only ferrites of the correct type, supplied by Raymarine authorized dealers.

### Connections to other equipment

If Raymarine equipment is to be connected to other equipment using a cable not supplied by Raymarine, a suppression ferrite must always be attached to the cable that is closest to the Raymarine unit.

## Declaration of conformity

Raymarine Ltd. declare that the A-Series Multifunction Displays are in compliance with the essential requirements of EMC directive 2004/108/EC.

The original Declaration of Conformity certificate may be viewed on the relevant product page at www.raymarine.com

## Product disposal

The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment. Whilst the WEEE Directive does not apply to some Raymarine products, we support its policy and ask you to be aware of how to dispose of this product.

The crossed out wheeled bin symbol, illustrated above, and found on our products, signifies that this product should not be disposed of in general waste or landfill.

Please contact your local dealer, national distributor or Raymarine Technical Services for information on product disposal.

## Warranty

To register your Raymarine A-Series Multifunction Display ownership, please take a few minutes to fill out the warranty registration card found in the box, or visit www.raymarine.com and register online.

It is important that you register your product to receive full warranty benefits. Your unit package includes a barcode label indicating the serial number of the unit. You should stick this label to the warranty registration card.

## About this manual

This handbook contains important information on the installation, operation and maintenance of your A-Series Multifunction display. The equipment described within is intended for use on leisure marine boats and workboats not covered by International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) Carriage Regulations.

## Technical accuracy

To the best of our knowledge, the information in this handbook was correct as it went to press. However, Raymarine cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, Raymarine cannot accept liability for any differences between the product and the handbook.

# Chapter 2: Planning the installation

This chapter provides information to help you prepare for the A-Series installation.

2

## Chapter contents


- 2.1 Handbook information on page 12
- 2.2 Installation overview on page 13
- 2.3 A-Series systems on page 13
- 2.4 Pack contents on page 16
- 2.5 Tools on page 17

## 2.1 Handbook information

This handbook contains important information on installing your A-Series Multifunction display and covers both freshwater and saltwater variants of the following models:

- A50 GPS Chartplotter
- A50D GPS Chartplotter/Fishfinder
- A57D GPS Chartplotter/Fishfinder
- A70 GPS Chartplotter
- A70D GPS Chartplotter/Fishfinder

This document is part of a series of books associated with the A-Series displays.

**A-Series handbooks**

| Title | Part number |
|---|---|
| **A-Series Installation instructions** | **87102** |
| A-Series Quick reference guide | 86136 |
| A-Series User reference guide (on user CD) | 81314 |

**Additional handbooks**

| Title | Part number |
|---|---|
| SeaTalk$^{ng}$ reference manual | 81300 |

You should also refer to separate instructions provided with any ancillary equipment.

All documents can be downloaded from: www.raymarine.com/handbooks.

## 2.2 Installation overview

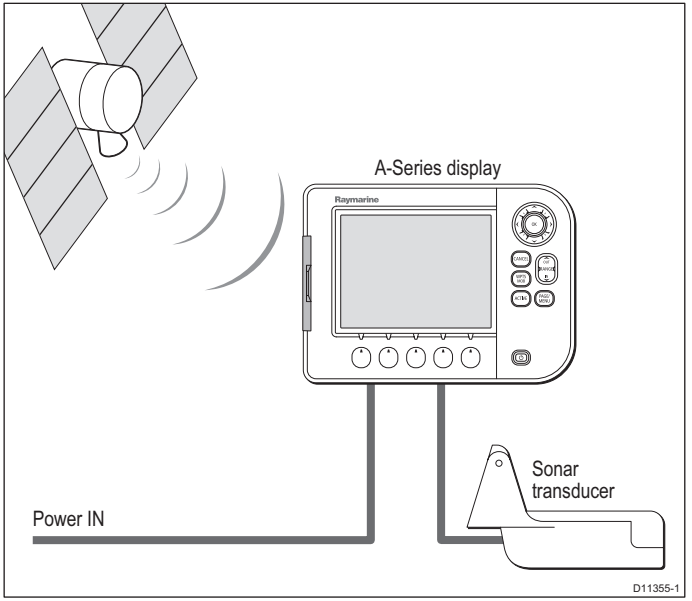
Your installation will include the following activities:

| | Installation task | Refer to |
|---|---|---|
| 1 | Plan your system | - Chapter 2: Planning the installation<br>- All installation instructions |
| 2 | Obtain all required equipment and tools. | - Pack contents on page 16<br>- Tools on page 17<br>- Chapter 9: Accessories |
| 3 | Site all equipment. | - Chapter 4: Location and mounting |
| 4 | Route all cables. | - Chapter 3: Cables and connections |
| 5 | Drill cable and mounting holes. | - Bracket mounting on page 32<br>- Panel mounting on page 35 |
| 6 | Make all connections into equipment. | - Chapter 3: Cables and connections |
| 7 | Secure all equipment in place. | - Bracket mounting on page 32<br>- Panel mounting on page 35 |
| 8 | Power on test the system. | - System checks on page 37 |

## 2.3 A-Series systems

The A-Series display can be used in a number of system types. Some examples of which are outlined in this section.

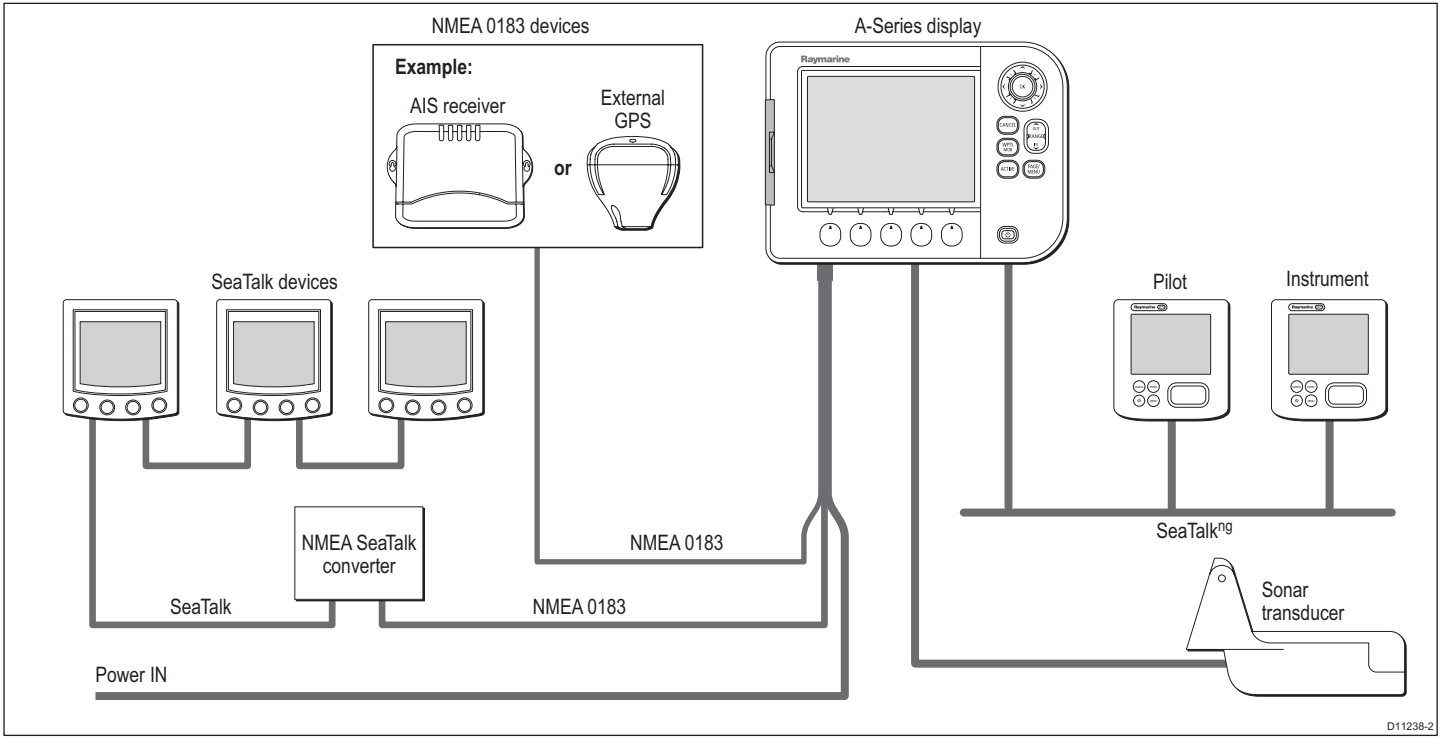
### Core system




The core A-Series system consists of:

- A-Series multi-function display
- Internal GPS antenna
- Sonar transducer on fishfinder (D) models only.

# Extended system




Your display can connect to various instruments and displays to share information and so improve the functionality of the system. These connections may be made using a number of different protocols.

Fast and accurate data collection and transfer is achieved by using a combination of the following data protocols:

- SeaTalk$^{ng}$
- National Marine Electronics Association (NMEA) 0183.
- NMEA 2000.

**Note:** You may find that your system does not use all of the connection types or instrumentation described in this section.

### SeaTalk$^{ng}$

SeaTalk$^{ng}$ (New Generation) is an onboard network utilizing a backbone cable running through the boat. Drop cables go from T connectors in the backbone up to individual instruments. Devices that have a low draw can be powered from the network.

### NMEA 0183

The NMEA 0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard to enable equipment from many different manufacturers to be connected together and share information.

The NMEA 0183 standard carries similar information to SeaTalk. However it has the important difference that one cable will only carry information in one direction. For this reason NMEA 0183 is generally used to connect a data receiver and a transmitter together, e.g. a compass sensor transmitting heading to a radar display.

This information is passed in ‘sentences’, each of which has a three letter sentence identifier. It is therefore important when checking compatibility between items that the same sentence identifiers are used some examples of which are:

- VTG - carries Course and Speed Over Ground data.
- GLL - carries latitude and longitude.
- DBT - carries water depth.
- MWV - carries relative wind angle and wind speed data.

### NMEA 2000

NMEA 2000 offers significant improvements over NMEA 0183, most notably in speed and connectivity. Up to 50 units can simultaneously transmit and receive on a single physical bus at any one time, with each node being physically addressable.

The standard was specifically intended to allow for a whole network of marine electronics from any manufacturer to communicate on a common bus via standardized message types and formats.

### See also

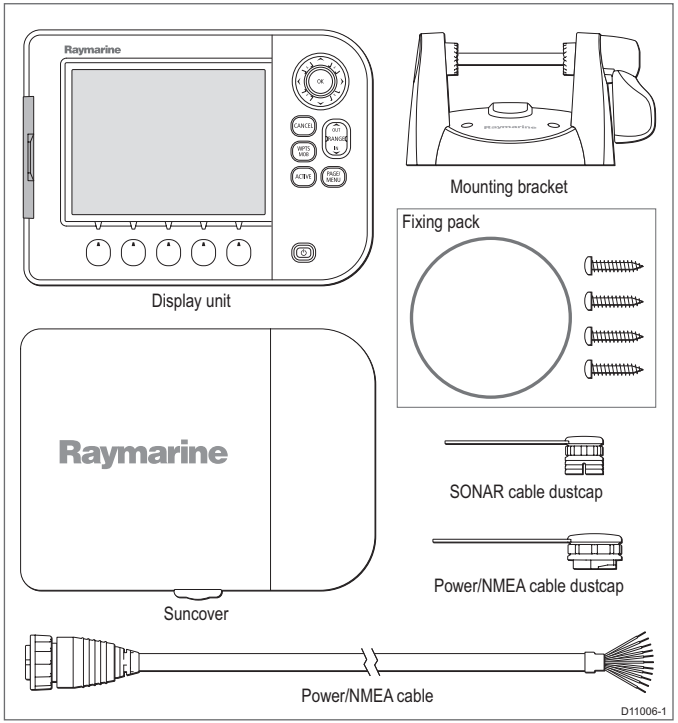
For a list of NMEA message types supported, refer to NMEA Messages on page 54.

# 2.4 Pack contents

Unpack the display unit carefully to prevent damage. Save the carton and packing in case the unit has to be returned for service.

**Pack items - All models**

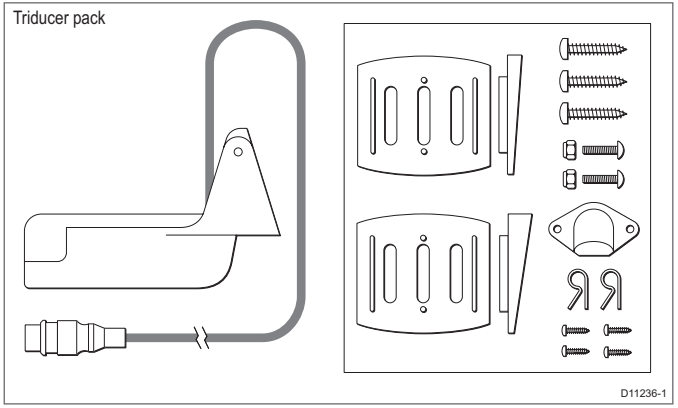
All models contain the following items:




| Description | Part No. |
|---|---|
| A-Series display | |
| Quick release mounting bracket | R62161 |
| Bracket fixing pack<br>Includes screws and O-ring | R32113 |
| Suncovers<br>A50 / A50D<br>A57D<br>A70 / A70D | <br>R62158<br>R62159<br>R62160 |
| Sonar cable dustcap | |
| Power / NMEA cable dustcap | |
| 6.56 (2 m) Power / NMEA cable | R62157 |
| Documentation Pack | |
| Warranty card | |

### Pack items - Chartplotter / Fishfinder (D) models

All chartplotter / fishfinder combination models contain the following additional triducer items:




**Note:** The triducer supplied will be suitable for fresh or saltwater.

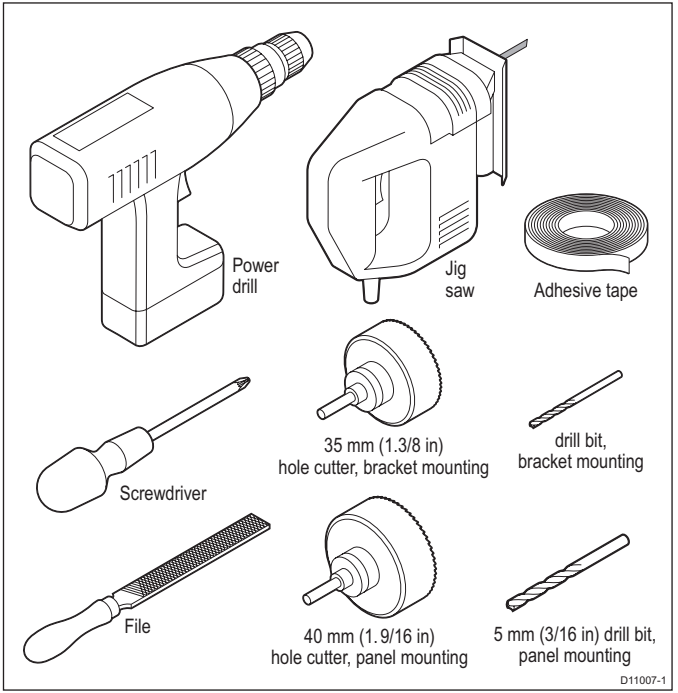
| Description | Part No. |
|---|---|
| P58 Transducer pack | A102138 |
| P48 Transducer pack | A102140 |
| Note: The transducer includes an 25 ft (7.62 m) flying lead for connection to the A-Series unit. | |

### See also

For details of options and accessories see Accessories on page 55.

## 2.5 Tools

You will need the following tools to install your display unit:



# Chapter 3: Cables and connections

This section contains information regarding the connection of power and equipment to your A-Series display.

3

## Chapter contents


- 3.1 General wiring instructions on page 20
- 3.2 Connection overview on page 21
- 3.3 Power connection on page 22
- 3.4 Sonar transducer connection on page 23
- 3.5 NMEA 0183 connections on page 24
- 3.6 SeaTalk connections on page 25
- 3.7 External GPS Connection on page 26
- 3.8 SeaTalk$^{ng}$ connections on page 26
- 3.9 NMEA 2000 connection on page 27


**See also**

For details of cable spares and accessories refer to Chapter 9: Accessories.

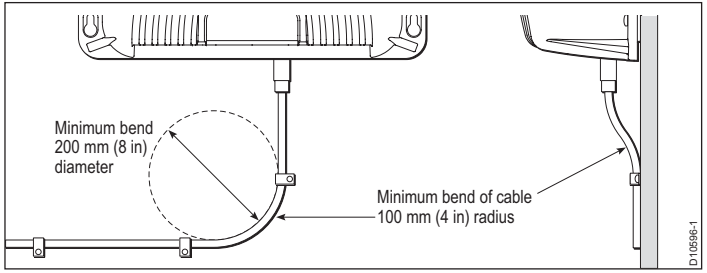
# 3.1 General wiring instructions

## Cable types and length

- Follow the guidelines given in this section to determine appropriate cable types and length.
- Unless otherwise stated use only standard cables of the correct type, supplied by Raymarine.
- Ensure that any non-Raymarine cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize any voltage drop in a cable.

## Routing cables

- No acute bends. Minimum bend radius of 100mm.




- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Avoid running cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and tie it out of the way.
- Use a watertight feed-through wherever a cable passes through an exposed bulkhead or deckhead.
- Do not pull cables through a bulkhead or deckhead using a cord attached to the connector. This could damage the connections.

You should always route data cables:

- as far apart from other equipment and cables as possible,
- as far away from high current carrying AC and DC power lines as possible,
- as far away from antennas as possible.

## Strain relief

- Ensure adequate strain relief is provided. Protect connectors from strain and ensure they will not pull out under extreme sea conditions.

## Circuit isolation

For installations using both AC and DC current:

- Always use isolating transformers or a separate power-inverter to run PC's, processors, displays and other sensitive electronic instruments or devices.
- Always use an isolating transformer with Weather FAX audio cables.
- Always use and RS232/NMEA converter with optical isolation on the signal lines.
- Always make sure that PC's or other sensitive electronic devices have a dedicated power circuit.

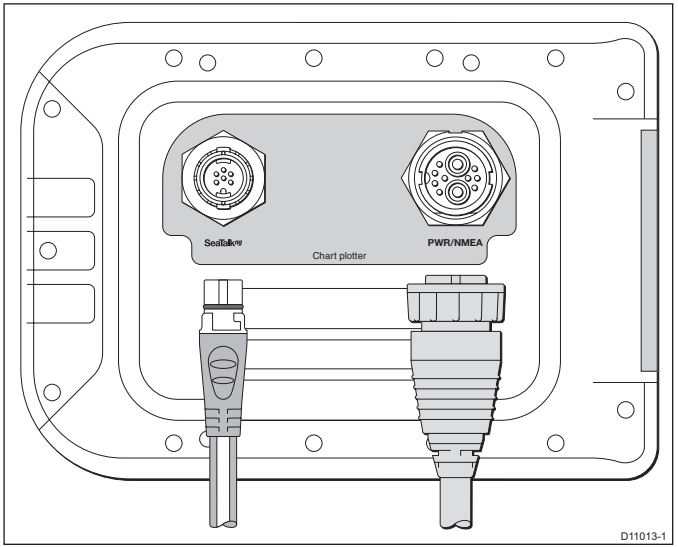
## Cable shielding

Ensure that all data cables are properly shielded that the cable shielding is intact (e.g. hasn't been scraped off by being squeezed through a tight area).

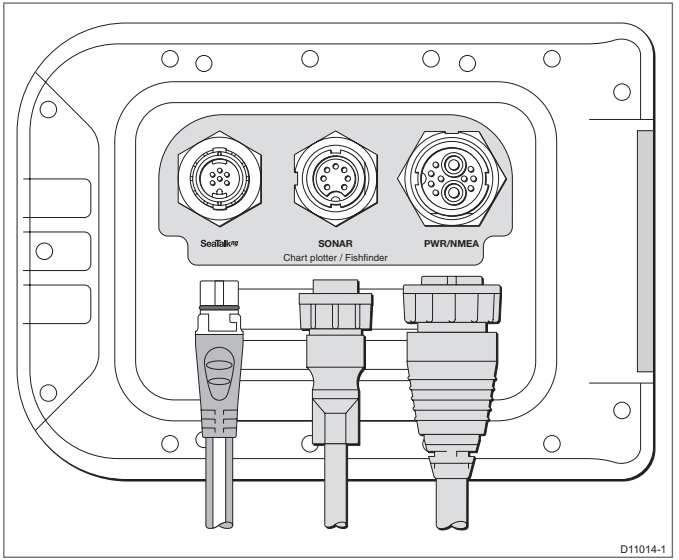
# 3.2 Connection overview

The cable connections are made to the rear of the display unit.

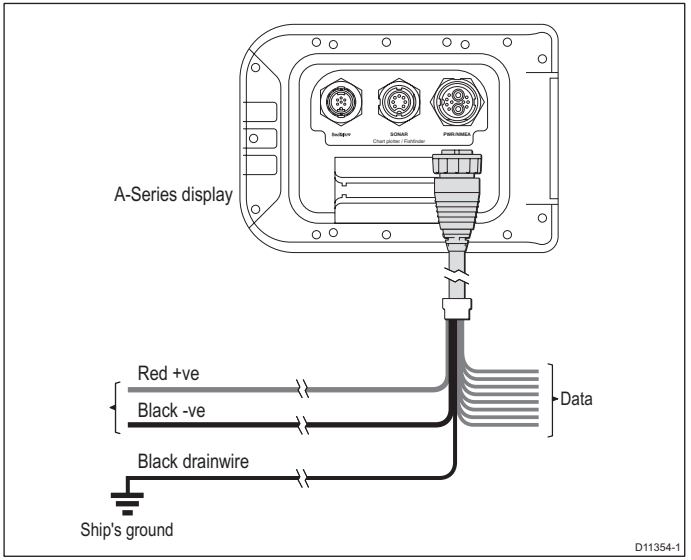
### GPS Chartplotter




### GPS Chartplotter / Fishfinder unit (D models)



# 3.3 Power connection




### Grounding

**WARNING: Grounding**

**This display is not intended for use on "positive" ground boats. The power input cable drain wires must be connected directly to the boats ground.**

- Use a dedicated earthing plate (e.g. dynaplate) in contact with the water.
- Ground cables may be routed to a common point (e.g. within the switch panel. With a single (appropriately rated) copper braid connecting to the earthing plate.
- Use flat tinned copper braid, 30 A rating (1/4 inch) or greater. Equivalent stranded wire diameter 4mm or greater.
- Keep the length of the earth braid as short as possible.

### A-Series power cable

| Cable | Part No | Notes |
|---|---|---|
| 2 m (6.56 ft) A50/A57/A70 Power and NMEA Cable | R62157 | Supplied with A-Series unit. |

For other cables and accessories refer to Options and accessories on page 56.

### A-Series power cable extension

The following restriction applies to any extension to the power cable:

| Length (max) | Cable gauge (AWG) |
|---|---|
| 10m (32.8 ft) | 14 |

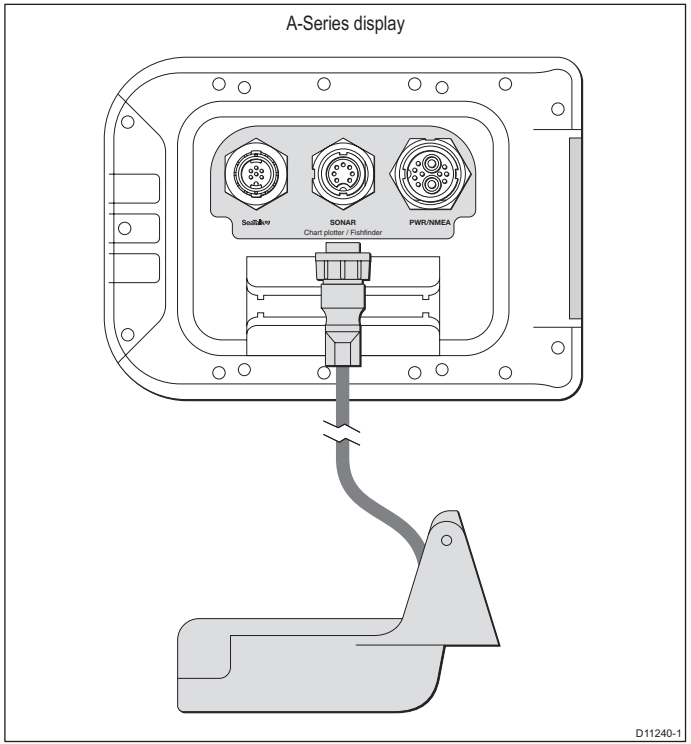
### Fuses & circuit protection

| Equipment | Thermal breaker | Fuse |
|---|---|---|
| A50, A50D, A57D, A70, A70D | 10A | 10A |

# 3.4 Sonar transducer connection

Fishfinder (D) models only

The A-Series is supplied with a sonar transducer. Connect this using the cable supplied. Other transducer types may be connected with the appropriate converter cable



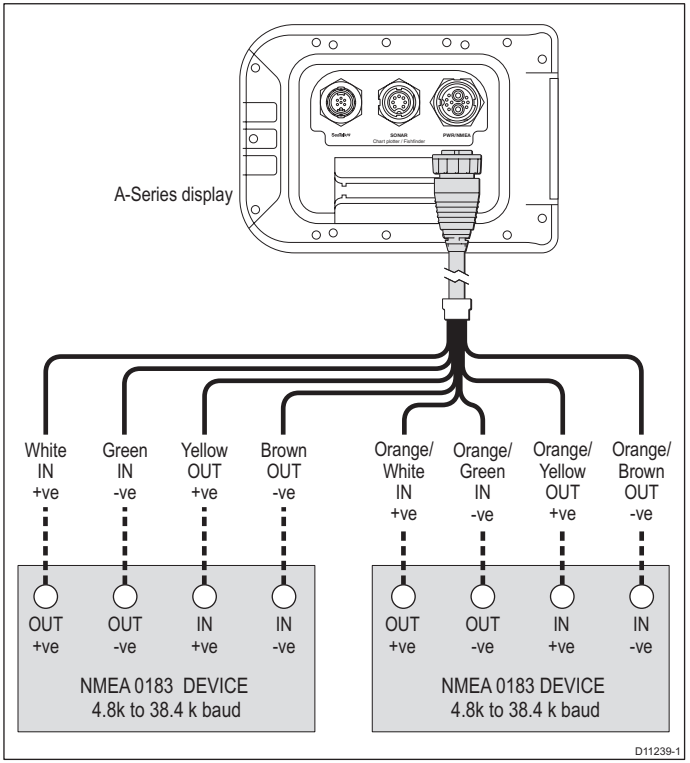

## Sonar transducer cable

| Cable | Part No | Notes |
|---|---|---|
| 7.62 m (25 ft) flying lead | | Attached to transducer. |
| **Extension cables (Small 7 way connector)** | | |
| 3 m (9.8 ft) Extension cable | E66074 | Used with the following transducers P48, P58, P74, B744V, B60, P36 |
| **Transducer converter cables** | | |
| Large 7 way male Small 7 way female | E66066 | Used with DSM 300 transducers B117, P319, P79, B258, B744VL |
| Large 9 way male Small 7 way female | E66070 | Used with the following transducers: L365, L470 |

For other cables and accessories refer to Options and accessories on page 56

# 3.5 NMEA 0183 connections

The A-Series has 2 NMEA ports available. These are connected using the supplied Power/NMEA cable.




### NMEA 0183 cable

| Cable | Part No | Notes |
|---|---|---|
| 2 m (6.56 ft) A50/A57/A70 Power and NMEA Cable | R62157 | Supplied with A-Series unit. |

For other cables and accessories refer to Options and accessories on page 56

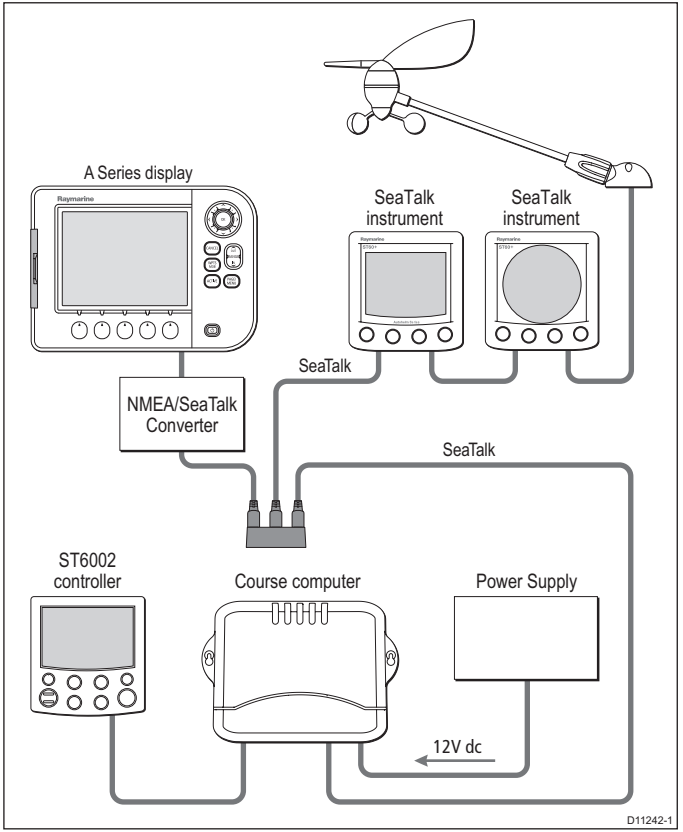
### NMEA cable extension

The following restriction applies to any extension to the NMEA cable:

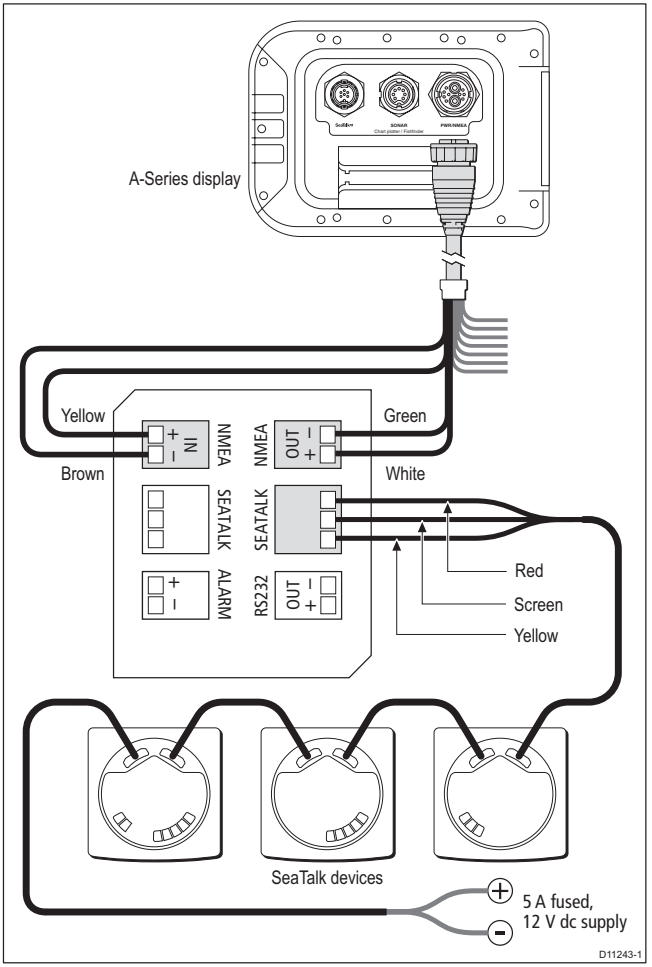
| Length (max) | Cable gauge (AWG) |
|---|---|
| 10 m (32.8 ft) | 20 |

# 3.6 SeaTalk connections

You can connect SeaTalk instruments to your A-Series using a SeaTalk to NMEA 0183 converter.




**SeaTalk connection**



## 3.7 External GPS Connection

The A-Series has a built in GPS antenna. If you wish to connect an external GPS antenna it may be either connected via SeaTalk or NMEA 0183 depending upon the antenna type.

**For SeaTalk connection refer to:**

- SeaTalk connections on page 25.
- Separate instructions supplied with your GPS unit.

**For NMEA 0183 connection refer to:**

- NMEA 0183 connections on page 24
- Separate instructions supplied with your GPS unit.

**See also**

When using an external GPS antenna you must disable to internal GPS from within the Setup menus. See External GPS setting on page 38.

## 3.8 SeaTalk$^{ng}$ connections

Your A-Series has a rear connector for SeaTalk$^{ng}$ systems. It can use SeaTalk$^{ng}$ to communicate with:

- SeaTalk$^{ng}$ instruments (e.g. ST70),
- SeaTalk$^{ng}$ autopilots (e.g. ST70 with SmartPilot SPX course computer),

### SeaTalk$^{ng}$ cables

The SeaTalk$^{ng}$ system uses the following cables and connections.

| Connection / Cable | Notes |
|---|---|
| Backbone cables (various lengths) | The main cable carrying data. Spurs from the backbone are used to connect SeaTalk$^{ng}$ devices. |
| T-piece connectors | Used to make junctions in the backbone to which devices can then be connected. |
| Terminators | Required at either end of the backbone. |
| Spur cables | Used to connect devices.<br>Devices may be daisy chained or connected directly to the T-pieces. |
| For SeaTalk$^{ng}$ cables and accessories refer to Options and accessories on page 56.<br>For more information refer to the separate SeaTalk$^{ng}$ reference manual. | |

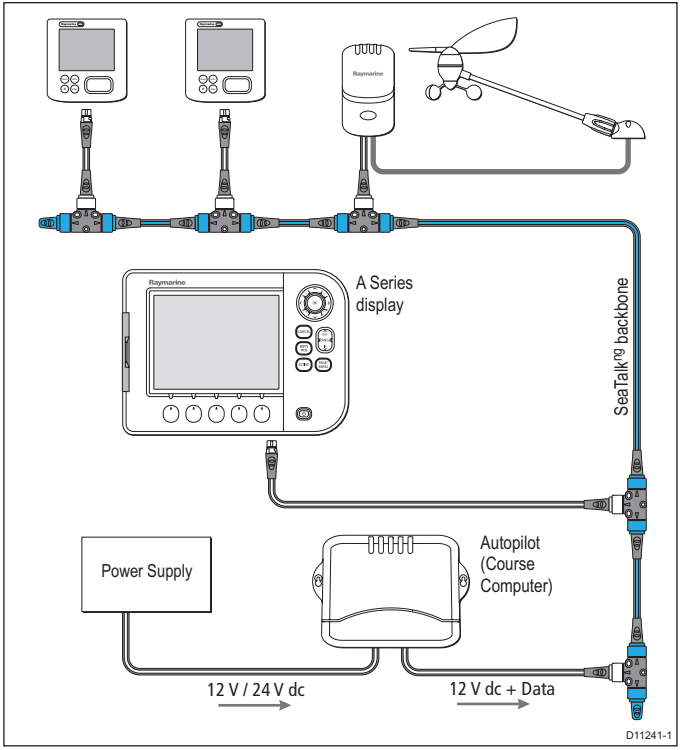
### SeaTalk$^{ng}$ power

The SeaTalk$^{ng}$ bus requires a 12 V power supply. This may be provided from:

- Raymarine equipment with a regulated 12 V supply. (e.g. a SmartPilot SPX course computer)
- Other suitable 12 V supply. (Note the grounding requirements for the A-Series system, see page *page 22*.

**Note:** SeaTalk$^{ng}$ does NOT supply power to your A-Series display.

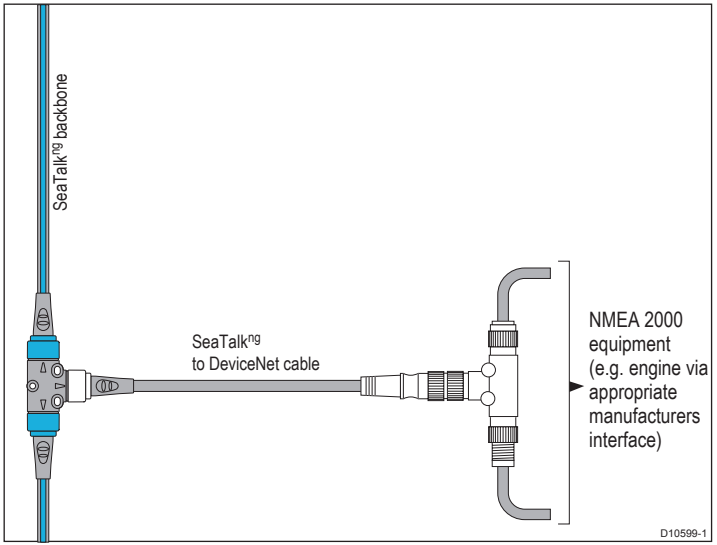
### Typical SeaTalk$^{ng}$ system




## 3.9 NMEA 2000 connection

NMEA 2000 devices are connected using the SeaTalk$^{ng}$ bus. The A-Series can display data received from NMEA 2000 devices (e.g. data from compatible engines).

You may connect NMEA 2000 compatible devices using appropriate adaptor cables.


SeaTalkng backbone
SeaTalkng to DeviceNet cable
NMEA 2000 equipment (e.g. engine via appropriate manufacturers interface)
D10599-1

# Chapter 4: Location and mounting

This section provides instructions for siting and mounting the A-Series unit.

4

## Chapter contents

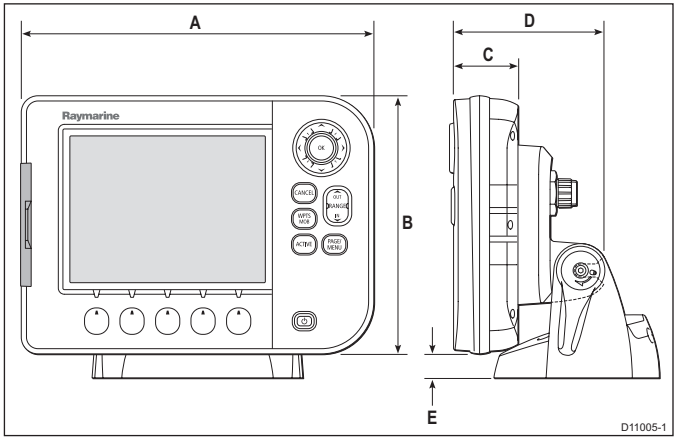

- 4.1 Unit dimensions on page 30
- 4.2 Selecting a location for the unit on page 31
- 4.3 Bracket mounting on page 32
- 4.4 Panel mounting on page 35


**See also**

For the optional panel mounting kit accessory, refer to Mounting options on page 56.

# 4.1 Unit dimensions

The dimensions for the A-Series Multifunction Displays are as follows:




| | A | B | C | D | E |
|---|---|---|---|---|---|
| **A50 / A50D** | | | | | |
| mm | 200.14 | 142.14 | 42.60 | 97.73 | 30.13 |
| inches | 7.88 | 5.60 | 1.68 | 3.85 | 1.20 |
| **A57D** | | | | | |
| mm | 226.64 | 158.64 | 42.60 | 97.73 | 21.88 |
| inches | 8.84 | 6.25 | 1.68 | 3.85 | 0.86 |
| **A70 / A70D** | | | | | |
| mm | 233.14 | 170.64 | 42.60 | 97.73 | 15.88 |

| | A | B | C | D | E |
|---|---|---|---|---|---|
| inches | 9.12 | 6.72 | 1.68 | 3.85 | 0.63 |

## 4.2 Selecting a location for the unit

**WARNING: Potential ignition sources**

**The equipment must NOT be installed in hazardous or flammable atmospheres such as an engine room.**

Your A-Series Multifunction display can be installed using the bracket supplied or panel mounted using an optional panel mount kit.

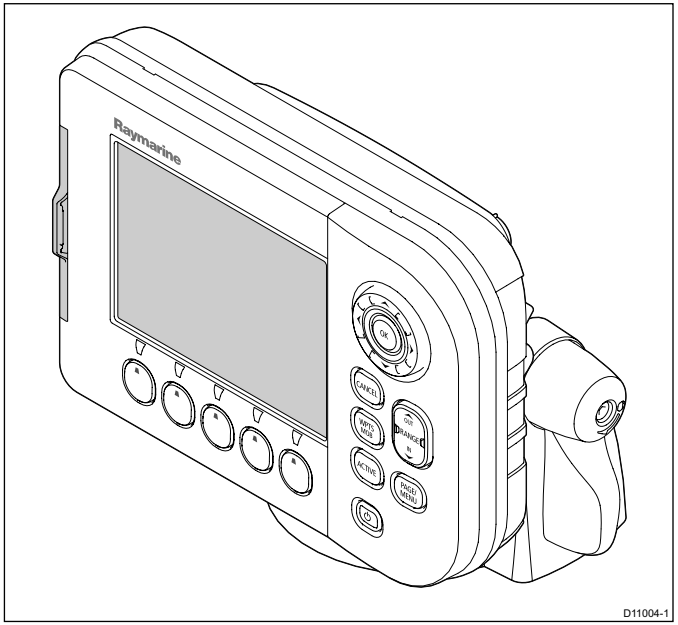
Before you install the unit it is important to consider the location:

- **Water ingress**
  The display is suitable for mounting both above and below decks. It is waterproof to IPX6 standard. Although the unit is waterproof, it is good practice to locate it in a protected area away from prolonged and direct exposure to rain and salt spray.
- **Viewing angle**
  The contrast and colors seen on all LCD units varies slightly with viewing angle and are best viewed perpendicular to the display. Avoid locations where excessive reflection will occur in normal use
- **Access**
  The mounting location should be easily accessible to enable operation of the front panel controls. There must be sufficient space behind the unit to enable cable connections to the rear panel connectors, avoiding tight bends in the cables.
- **Electrical interference**
  Select a location that is far enough away from devices that may cause interference, such as motors, generators and radio transmitters/receivers.
- **Magnetic compass**
  Select a location that is at least 3 ft (1 m) away from a magnetic compass.
- **Cable runs**
  Select a location that is as close as possible to the boat's DC power source.
- **Environmental**
  Protect the display from physical damage and excessive vibration.

# 4.3 Bracket mounting

**CAUTION: Use the mounting template**
**The unit is supplied with a mounting template, use this to locate the correct position for the bracket and its fasteners.**

## Mounting bracket introduction

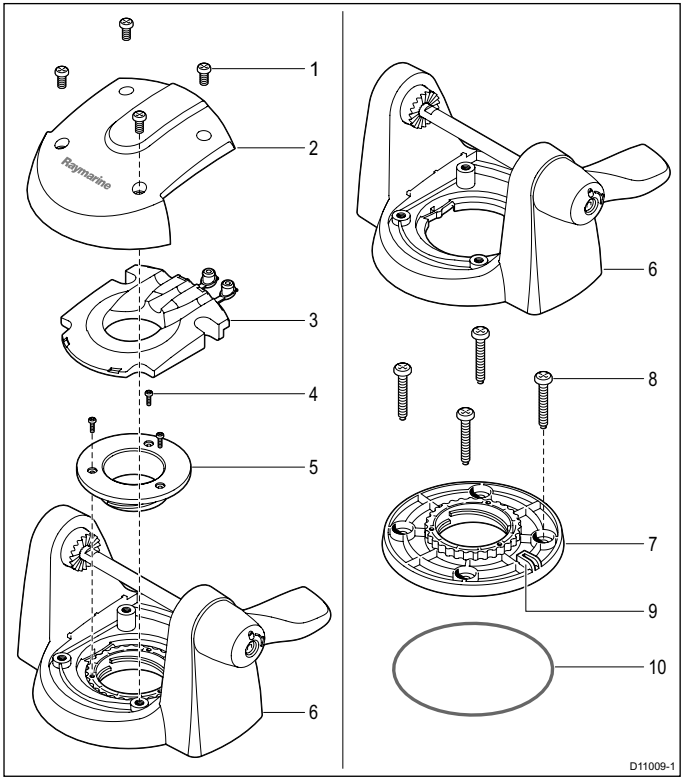



Installation of the unit using the mounting bracket consists of four stages:

1. Preparing the bracket.
2. Installing the base plate.
3. Re-assembling the bracket.
4. Installing the unit.

## Preparing the bracket

Before the mounting bracket can be installed it is necessary to break it down into its component parts.



### *To prepare the mounting bracket:*

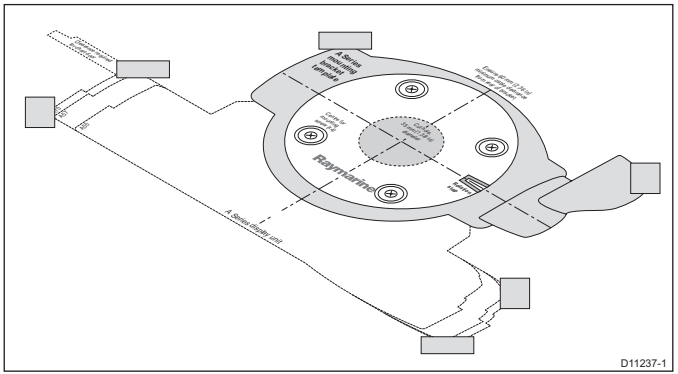
1. Remove the four screws (1) from the cover (2) and retain for later use.
2. Remove the cover (2) by lifting it away from the bracket (6).
3. Remove the cable seal (3) from the bracket, taking care not to damage the attached blanking plugs.
4. Remove the small securing screws (4) from the locking ring (5) and retain for later use.
5. Turn the locking ring counter-clockwise to unlock it from the bracket and remove.
6. Push the base plate (7) and O-ring (10) away from the bracket.

## Installing the base plate

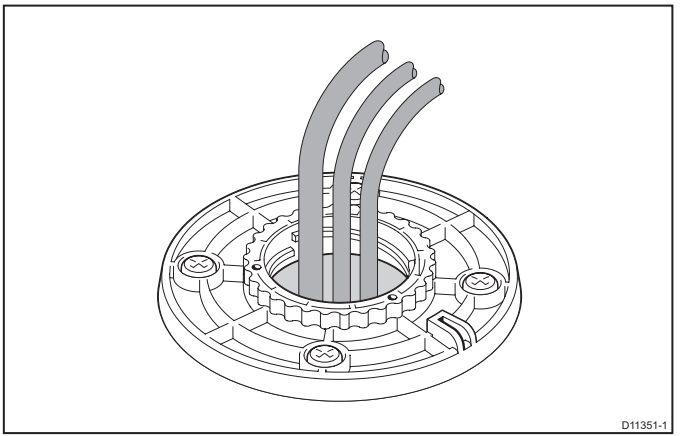
**Note:** Careful installation of the base plate is required to preserve watertight integrity.

### *To install the base plate:*

1. Use adhesive tape to attach the mounting template in the required position.




2. Mark the position of the four securing screws (8) and the cable hole.
3. Ensure that there are no cables or equipment behind the mounting surface that can be damaged, then use the hole saw to remove the material from the cable hole.
4. Use the file to remove any burrs from around the cable hole
5. Drill a 9/16” (3 mm) pilot hole at each of the marked screw positions.
6. Carefully place the O-ring (10) in the groove on the underside of the base plate.
7. Pass the power cable and if applicable, the sonar and SeaTalk$^{ng}$ cables through the centre hole of the base plate.
8. Secure the base plate into position using the supplied screws, ensuring that the O-ring remains in position.



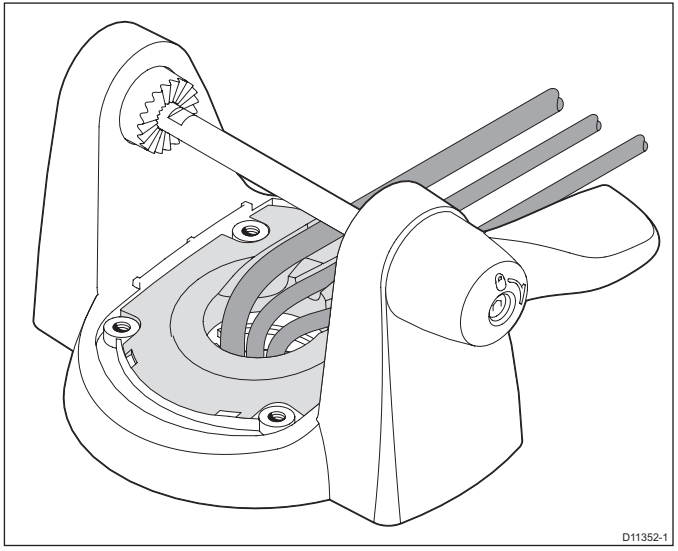

**Note:** For fiberglass mountings, countersink each of the pilot holes to prevent damage to the gelcoat when driving in the screws.

## Re-assembling the bracket

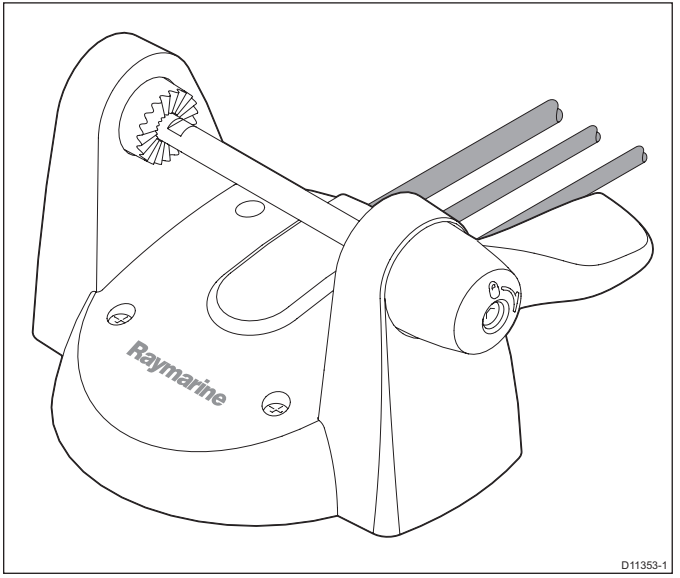
The mounting bracket can now be re-assembled to the base plate.

### *To re-assemble the bracket:*

1. Pass the power cable and if applicable, the sonar and SeaTalk$^{ng}$ cables through the centre hole of the mounting bracket and the locking ring.
2. Place the mounting bracket in position on the base plate, using the locating lugs to ensure that it is at the correct angle. The locking mechanism should be on the right-hand side of the bracket when installed.
3. Refit the locking ring and rotate clockwise to secure it in position.
4. Refit the screws to secure the locking ring in position.
5. Pass the cable(s) through the centre hole of the cable seal and place the seal in position, ensuring that the cable channels locate at the rear of the mounting bracket.

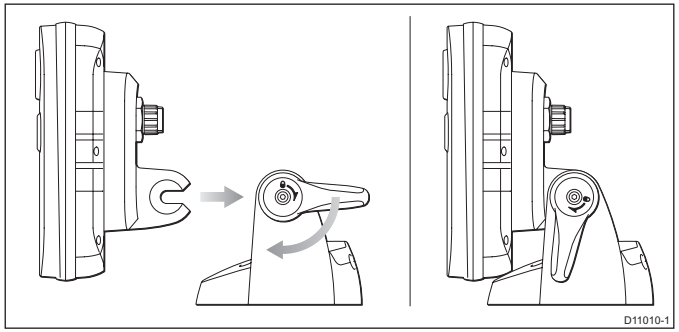



6. Place the cable(s) into the cable channels and secure them by refitting the base cover and securing it in place using the four screws. Make sure that you leave enough cable to allow connection the rear of the display unit.



### Attaching the display to the bracket

Having installed the mounting bracket, the display unit can now be attached to the bracket.



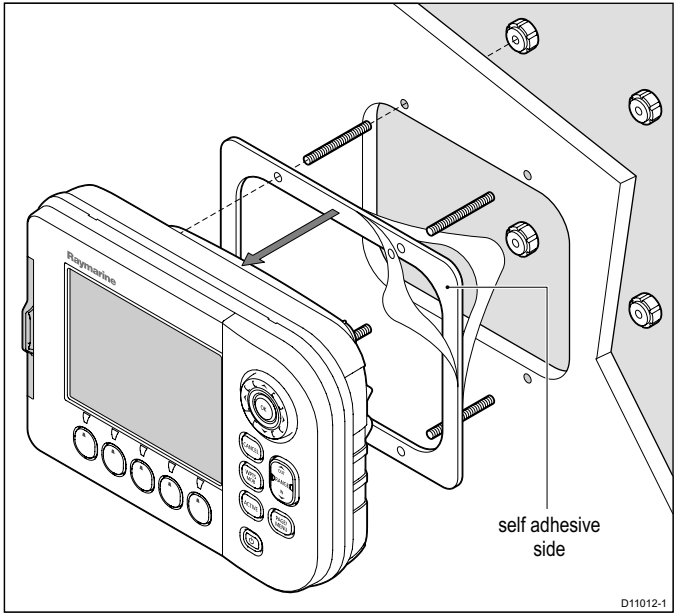

#### *To attach the display to the bracket:*

1. Release the locking mechanism, by turning the lever anticlockwise.
2. Place the display unit onto the mounting bracket.
3. Move the locking lever down and clockwise until a positive ‘click’ is felt. The display unit is now secured to the mounting bracket.
4. Attach the power cable and if applicable, the sonar and SeaTalk$^{ng}$ cables to their respective connectors on the rear of the unit.
5. Tilt the unit to the required viewing angle and lock in position by moving the locking lever towards you until a positive “click’ is felt. The display is now locked in position.

You can change the viewing position at any time, by releasing the locking lever backwards until a positive ‘click’ is felt, move the unit to the new position and moving the locking lever forward until a positive ‘click’ is felt.

## 4.4 Panel mounting

Requires the optional panel mounting kit.




#### *To panel mount the display unit:*

1. Check the selected location for the unit.
   Take care that there are no cables or equipment behind the mounting surface that can be damaged.
   Ensure adequate clearance for cable connections to the rear and the chart card door to the left.
2. Use self-adhesive tape to attach the mounting template in the required position. Ensure that it is level.

3. Use the hole saw to make a piot hole in each corner of the area to be cut out.
4. Use the saw to cut along the inside edge of the cut out line and join the holes in each corner.
5. Drill four 3/16” (4.5mm) pilot holes as indicated on the template to accept the securing studs.
6. Use the file to carefully remove any rough edges around the cut out.
7. Make sure that the unit fits into the cut out.
8. Remove the unit from the cut out and place the gasket onto the rear of the unit.
9. Fix the four securing studs into the rear of the unit.
10. Connect the cables to the display unit as described in Chapter 3: Cables and connections.
11. Slide the unit into the cut out.
12. From the rear, attach the supplied nuts onto the securing studs and tighten until secure.

# Chapter 5: System checks

This section contains initials checks and settings you should make once the hardware installation is complete.

5

## Chapter contents


- 5.1 Initial power on test on page 38
- 5.2 External GPS setting on page 38
- 5.3 GPS Check on page 39
- 5.4 Transducer check on page 39
- 5.5 Set the language on page 40


**See also**

For all other settings refer to the user reference manual.

# 5.1 Initial power on test

## Turn on the display

### *To Power ON:*

Press and hold the **POWER** key until the screen shows the Raymarine logo.

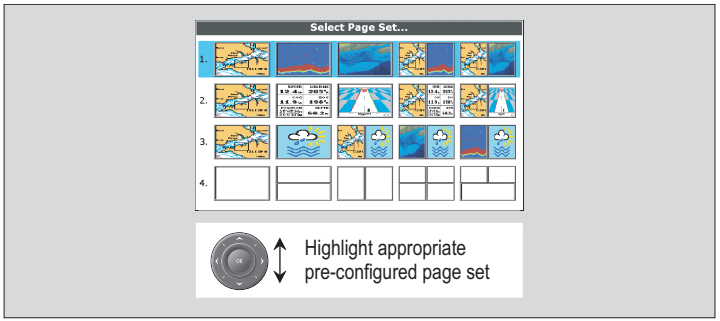
## Select a page set

When you first turn the display on you will be prompted to select a page set from those available.

**Note:** You can change the required page set at any time. Refer to the user reference manual for details.

### *Select a page set at first time Power on:*

1. Use the trackpad **Up/Down** keys to select the first Page Set in the list.




2. Press **OK**.

# 5.2 External GPS setting

When using an external GPS antenna you must disable the internal GPS. Failure to do this will result in no GPS fix being available.

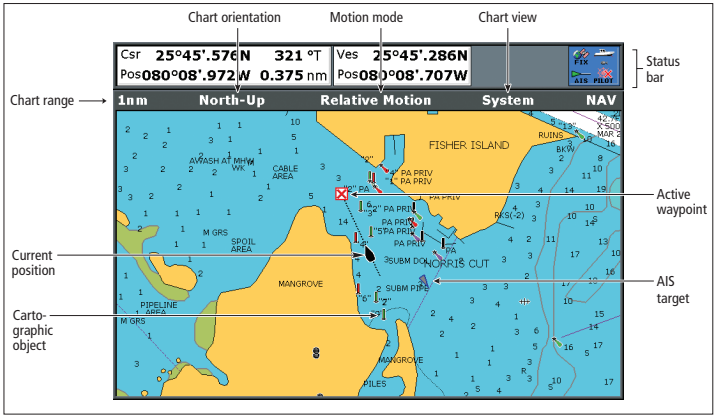
### *To disable the internal GPS:*

1. Press and hold the **PAGE/MENU** key to open the setup menu.
2. Use the trackpad **up / down** to select the **Internal GPS** option.
3. Use the trackpad **right** to open the sub-menu.
4. Use the trackpad to select **OFF**
5. Press **OK** to accept and save the change.
6. Press **OK** again to return back through the menus to the normal display.

## 5.3 GPS Check

### *Select the chart page:*

1. Press **PAGE/MENU** to show the available pages in the toolbar.
2. Press **PAGE/MENU** to switch between the available pages.
3. Press **OK** when the chart is displayed.




### *Check data:*

With the chart displayed, you should see.

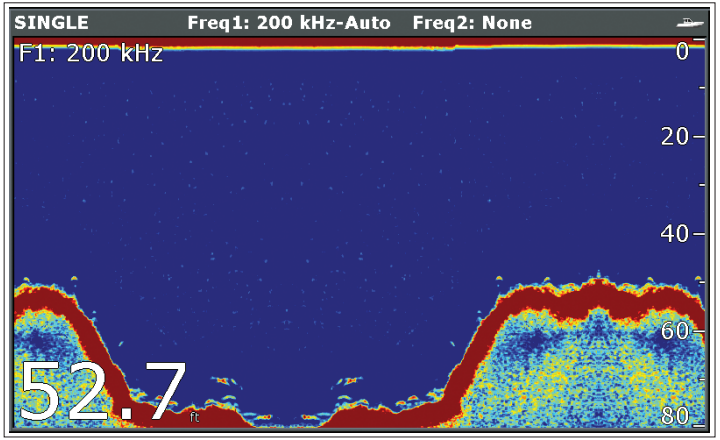
- **Your boat position** (indicates a GPS fix)
  Your current position is represented by a boat symbol or solid circle. Your position is also displayed in the data bar under VES POS.

**Note:** A solid circle on the chart indicates that neither heading nor Course Over Ground (COG) data is available.

## 5.4 Transducer check

### *Select the fishfinder page:*

1. Press **PAGE/MENU** to show the available pages in the toolbar.
2. Press **PAGE/MENU** to switch between the available pages.
3. Press **OK** when the fishfinder is displayed




### *Check data:*

With the fishfinder active you should see:

- **Depth reading** (indicates the transducer is working
  The depth is shown in large white numbers at the bottom left of the screen

## 5.5 Set the language

The system can operate in the following languages:

| | | |
|---|---|---|
| English (US) | English (UK) | Chinese |
| Danish | Dutch | Finnish |
| French | German | Greek |
| Icelandic | Italian | Japanese |
| Korean | Norwegian | Portuguese |
| Russian | Spanish | Swedish |

### *To select a language:*

1. Press and hold the **PAGE/MENU** key to open the setup menu.
2. Use the trackpad **up / down** to select the **System Setup** menu.
3. Use the trackpad **right** to open the sub-menu.
4. Use the trackpad to select the **Language** options.
5. Select from the languages available.
6. Press **OK** to accept and save the change.
7. Press **OK** again to return back through the menus to the normal display.

# Chapter 6: Troubleshooting

This section contains information to help diagnose and correct any problems with the installations.

6

## Chapter contents


- 6.1 Power up on page 42
- 6.2 GPS on page 43
- 6.3 Fishfinder / Sonar transducer on page 44
- 6.4 System data on page 45


**See also**

For display software updates. Visit www.raymarine.com and follow the links to customer support and the latest software updates.

# 6.1 Power up

| Problem | Possible causes | Possible solutions |
|---|---|---|
| - The display does not power up. | - Problem with power to the unit | - Check relevant fuses and breakers. |
| | | - Check that the power supply cable is sound and that all connections are tight and free from corrosion. |
| | | - Check that the power source is of the correct voltage and sufficient current. |

## 6.2 GPS

| Problem | Possible causes | Possible solutions |
|---|---|---|
| - "No Fix" GPS status icon is displayed. | - External GPS antenna conflict with internal GPS | - Disable internal GPS from within the setup menus. Refer to External GPS setting on page 38. |
| | - A-Series unit in poor position to receive signal. | - Move unit to a location with a better view of the sky. |
| | - External GPS antenna in poor position<br>- External GPS installation problem | - Ensure GPS antenna has a clear view of the sky.<br>- Refer to manufacturers handbook for installation details. |
| | - External GPS connection fault | - Ensure that GPS connections and cabling are correct. |
| | - External GPS equipment fault | - Ensure that the GPS is functioning correctly (refer to manufacturers handbook). |
| | - Geographic location or prevailing conditions preventing satellite fix. | - Check periodically to see if a fix is obtained in better conditions or another geographic location. |

# 6.3 Fishfinder / Sonar transducer

| - Problem | - Possible cause / solution | - Possible solutions |
|---|---|---|
| - No data source for the fishfinder. | - Cable / connection fault to transducer. | - Check that the transducer cable is sound and that all connections are tight and free from corrosion. |
| | - Transducer or connection incompatible with A-Series unit. | - Refer to list of compatible transducers Transducers and associated cables on page 57<br>- Contact Raymarine technical support. |

## 6.4 System data

| Problem | Possible cause / solution | Possible solutions |
|---|---|---|
| - Instrument or other system data is not displayed | - Data source (e.g ST70 instrument) is not operating. | - Check the source of the missing data (e.g. ST70 instrument) |
| | | - Refer to the manufacturers handbook for the equipment in question. |
| | - Software mismatch between equipment may prevent communication. | - Contact Raymarine technical support |

# Chapter 7: Technical support

This section contains information to help diagnose and correct any problems with the installations.

7

## Chapter contents


- 7.1 Raymarine technical support on page 48
- 7.2 Navionics contact details on page 49
- 7.3 Sirius contact details on page 50


**See also**

For additional and regional contact details visit www.raymarine.com

# 7.1 Raymarine technical support

This section details how you can obtain technical support for your A-Series system or for your Navionics cartography.

Raymarine provides a comprehensive customer support service, on the world wide web, through our worldwide dealer network and by telephone help line. If you are unable to resolve a problem, please use any of these facilities to obtain additional help.

If you need to request service, please quote the following product information:

- Product name.
- Product identity.
- Serial number.
- Software application version.

***To see your product information***

1. Open the system Setup menu.
2. Select System Diagnostics.
3. Select Software Services.
4. Select the Software Services menu:

## Web

There is a Customer Support area on our website at:
**www.raymarine.com**

This contains Frequently Asked Questions, servicing information, e-mail access to the Raymarine Technical Support Department and details of worldwide Raymarine agents.

If you don't have access to the web, contact Technical Support where specialists are available to answer questions about installing, operating and trouble-shooting all Raymarine products.

## Contacting Raymarine in the North America

You can contact Raymarine in the US either using the website as detailed above or by calling one of the telephone numbers below.

### For accessories and parts

Contact your authorized Raymarine dealer or Raymarine Technical Services on:

1-**603-881-5200**

Opening hours: Monday through Friday 0815 - 1700, Eastern Standard or Eastern Daylight Savings Time.

### For product repair and service

If your Raymarine product should develop a problem, contact your authorized Raymarine dealer for assistance. The dealer is best equipped to handle your service requirements and can offer time-saving help in getting your equipment back into normal operation.

If repairs cannot be obtained conveniently, product service can be obtained by returning the unit to:

Raymarine Inc.
21 Manchester Street
Merrimack, NH,
03054 - 4801
US

The Product Repair Centre is open Monday to Friday 0815 to 1700 Eastern Standard Time or Eastern Daylight Savings Time.

All products returned to the Repair Centre are registered upon receipt and a confirmation letter is sent to acknowledge the repair status and the reference number of the product.

We will make every effort to carry out the repair and return your unit as quickly as possible.

If you wish to enquire about the repair status of your unit, contact the Repair Centre on:

1-603-881-5200

## Contacting Raymarine in Europe

You can contact Raymarine in Europe either using the Raymarine website as detailed above or by calling the telephone number below.

### For technical support, service and accessories

Contact your authorized Raymarine dealer or Raymarine Technical Support at:

Quay Point
Portsmouth
P03 5TD
England

Tel: **+44(0)23 92714713**

Fax: **+44(0)23 92661228**

# 7.2 Navionics contact details

For questions about Navionics cartography, contact Navionics directly through their website:

www.navionics.com

or contact Navionics customer support:

| **Navionics customer support** | | |
|---|---|---|
| Navionics Italy | Via Fondacci, 269<br>Z.I. Montramito<br>55054 Massarosa Italy | Tel: +39-0584-329111<br>Fax: +39-0584-962696<br>sales@navionics.it |
| Navionics USA | 6 Thatcher Lane<br>Wareham<br>MA 02571 USA | Toll Free: 800-848-5896<br>Tel: 508-291-6000<br>Fax: 508-291-6006<br>sales@navionics.com |
| Navionics Australia | 134/85 Reynolds Street<br>Balmain<br>NSW 2041 Australia | Tel: +61-2-9555-2522<br>Fax: +61-2-9555-2900<br>sales@navion-ics.com.au |
| Navionics UK | PO Box 38<br>Plymouth, PL9 8YY England | Tel: +44-1752-204735<br>Fax: +44-1752-204736<br>sales@navionics.co.uk |

If you wish to file a report of an error or omission on a Navionics chart, please provide the information to Navionics web site, Discrepancy Report section at the link below:

http://www.navionics.com/DiscrepancyReports.asp

## 7.3 Sirius contact details

For questions about the Sirius marine weather service, contact:

www.sirius.com/marineweather
1-800-869-5480

For questions about the Sirius audio, contact:

www.sirius.com
1-888-539-SIRIUS

# Chapter 8: Technical Specification

8

## Chapter contents


- 8.1 Technical specification on page 52
- 8.2 Unit dimensions on page 53
- 8.3 NMEA Messages on page 54

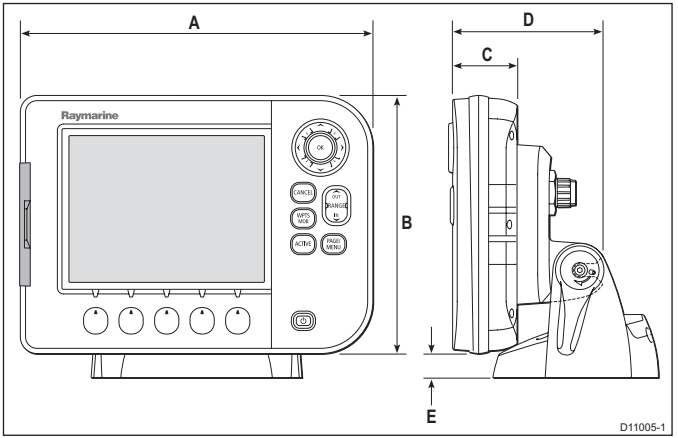
# 8.1 Technical specification

| | |
|---|---|
| Nominal supply voltage | 13.8 VDC |
| Operating voltage range | 10.7-18.0 V DC |
| Fuse / Breakers | 13.8 V supply:<br>10 A fuse protection at distribution panel<br>10 A thermal circuit breaker protection at distribution panel |
| Typical Power consumption | Consumption with full brightness: 9W<br>Power Consumption in Standby: Less than 100mW (10mA @ 10 Volts) |
| Display screen | 5.0 inch color TFT LCD (640x480 pixels VGA) ·<br>LED Backlight 400 Nits (350 minimum) ·<br>Antiglare coating |
| Environmental conditions: | Operating temperature: -10°C to 50°C (14°F to 122°F)<br>non-operating temperature: -20°C to 70°C (-4°F to 158°F)<br><br>Relative humidity max: 95%<br><br>Waterproof to IPX6 |
| Environmental | Raymarine environmental specification WI007 category above deck |
| Storage conditions for packaged unit: | Temperature: -25°C to 55°C (-13°F to 158°F)<br>Relative humidity: 75% |
| Weight | 2.25 lbs (1.02 kg) dash mounted ·<br>3.09 lbs (1.40 kg) bracket mounted |
| Data connections | NMEA 0183 Input(x2)<br>NMEA 0183 Output (x2)<br>Set 4800, 9600 or 38400 Baud as required<br><br>SeaTalk$^{ng}$<br>Sonar / Transducer (7 way connector)<br>Compact flash slot. |
| GPS | 12 channel Active Antenna design ·<br>Frequency of operation: 1575.43 Mhz +/- 1Mhz (C/A code), L1 ·<br>Sensitivity: 159dBm (tracking), 142dBm acquisition ·<br>Signal Acquisition: Automatic ·<br>Hot start <1 second, Cold Start 35 seconds to 2.5 minutes under good signal conditions ·<br>SBAS: WAAS/EGNOS compatible ·<br>Almanac update: Automatic ·<br>Horizontal Positional Accuracy: <=15metre @ 95% of time (without SA), <=5metres @ 95% with WAAS/EGNOS ·<br>Geodetic Datum: WGS-84 (alternatives available through Raymarine display)<br>Update rate: Once a second ·<br>Helical antenna for even antenna gain across all orientations ·<br>Sirf standard library ·<br>Upgradeable from host processor over serial link<br>NMEA 4800 baud, Rx: 3v3 compliant, Tx: 1v99-3v15 ·<br>RTCM: Not supported ·<br>Power: 3V3 @ 80mA nominal (Supply can be between 2v9 and 5v) · |

| | |
|---|---|
| Sonar / Transducer | **D Saltwater:** P58 transducer with 30 ft cable.<br>Sonar Frequency 200/50 KHz Saltwater<br>Transmit Power 500W - RMS Saltwater<br>Depth Range 1 foot to 600 feet, resolution<br><br>**D Freshwater:** P48 transducer with 25 ft cable<br>Sonar Frequency 200KHz Freshwater<br>Transmit Power 400W - RMS Freshwater<br>Depth Range 1 foot to 600 feet, resolution<br><br>Automatic selection |
| Cartography | Navionics cartography for appropriate region. |
| Chart Modes | Head Up, Course Up or North Up (selectable True or Magnetic bearings) Relative or True Motion |
| CE approvals - conforms to: | Standard applied Sections 9 and 10 of EN 60945 : 2002<br><br>EMC Compliance:<br>Europe 2004/108/EC (EMC)<br><br>Australia and New Zealand: C-Tick, Compliance Level 2 |

# 8.2 Unit dimensions

The dimensions for the A-Series Multifunction Displays are as follows:




| | A | B | C | D | E |
|---|---|---|---|---|---|
| A50 / A50D | | | | | |
| mm | 200.14 | 142.14 | 42.60 | 97.73 | 30.13 |
| inches | 7.88 | 5.60 | 1.68 | 3.85 | 1.20 |
| A57D | | | | | |
| mm | 226.64 | 158.64 | 42.60 | 97.73 | 21.88 |
| inches | 8.84 | 6.25 | 1.68 | 3.85 | 0.86 |

| | A | B | C | D | E |
|---|---|---|---|---|---|
| A70 / A70D | | | | | |
| mm | 233.14 | 170.64 | 42.60 | 97.73 | 15.88 |
| inches | 9.12 | 6.72 | 1.68 | 3.85 | 0.63 |

## 8.3 NMEA Messages

**NMEA 0183 Input messages**

APB, BWC, BWR, DBT, DPT, GLL, MTW, RMB, RMC, RTE, VHW, VLW, VTG, ZDA

**NMEA 08183 Output messages**

APB, BWC, BWR, DBT, DPT, GLL, MTW, RMB, RMC, RTE, VHW, VLW, VTG, ZDA

**NMEA 2000 messages**

PGN Transmissions: 126996,126464, 129025, 129029, 129044, 129539, 129045, 129540, 129550, 129551, 126992, 129026, 1298259, 129291, 129283, 130577, 129284, 129302, 128275, 129033, 129301, 130310, 127489, 127488, 127505, 127237, 127245, 127250, 130578, 128267, 60928, 59392, 130306, 127498

PGN Receptions: 126208,126464, 129025, 129029, 129044, 129539, 129045, 129540, 129550, 129551, 126992, 129026, 1298259, 129291, 129283, 130577, 129284, 129302, 128275, 129033, 129301, 130310, 127489, 127488, 127505, 127237, 127245, 127250, 130578, 128267, 60928, 59392, 130306, 127498, 59904

# Chapter 9: Accessories

This section contains optional hardware and cable items and spare/replacement parts.

9

## Chapter contents


- 9.1 Options and accessories on page 56
- 9.2 Spare parts on page 58

# 9.1 Options and accessories

## Mounting options

| Description | Part No | Notes |
|---|---|---|
| A50/A57/A70 Panel Mount Kit | A62154 | Optional kit required for panel mounting. |

## SeaTalk accessories

| Description | Part No | Notes |
|---|---|---|
| NMEA / SeaTalk converter | E85001 | Required for connection of SeaTalk instruments and equipment to an A-Series display. |
| 3 m SeaTalk extension cable | D285 | |
| 5 m SeaTalk extension cable | D286 | |
| 9 m SeaTalk extension cable | D287 | |
| 20 m SeaTalk extension cable | D288 | |
| 12 m SeaTalk extension cable | E25051 | |

## SeaTalk$^{ng}$ accessories

| Description | Part No | Notes |
|---|---|---|
| Backbone Kit | A25062 | Includes:<br>2 x 5 m Backbone cable<br>1 x 20m Backbone cable<br>4 x T-piece<br>2 x Backbone terminator<br>1 x Power cable |
| SeaTalk ng 400mm spur | A06038 | |
| SeaTalk ng 1m spur | A06039 | |
| SeaTalk ng 3m spur | A06040 | |
| SeaTalk ng 5m spur | A06041 | |
| SeaTalk ng 400mm backbone | A06033 | |
| SeaTalk ng 1m backbone | A06034 | |
| SeaTalk ng 3m backbone | A06035 | |
| SeaTalk ng 5m backbone | A06036 | |
| SeaTalk ng 20m backbone | A06037 | |
| SeaTalk ng - bare ends 1m spur | A06043 | |

| Description | Part No | Notes |
|---|---|---|
| SeaTalk ng - bare ends 3m spur | A06044 | |
| SeaTalk ng - SeaTalk 2 400mm spur | A06048 | |
| SeaTalk ng Power cable | A06049 | |
| SeaTalk ng Terminator | A06031 | |
| SeaTalk ng T-Piece | A06028 | |
| SeaTalk ng E-Piece | A06064 | |
| SeaTalk ng Blanking plug | A06032 | |

## Transducers and associated cables

The transducer is supplied with its own cable. You may use other compatible transducers with an appropriate cable converter.

| Description | Part No | Notes |
|---|---|---|
| **Standard Transducer cables (Small 7 way connector)** | | |
| 3 m (9.84 ft) Extension cable | E66074 | Used with the following transducers<br>P48, P58, P74, B744V, B60, P36<br><br>If using a B60 transducer, you will need the E66066 converter cable |
| **Transducer converter cables** | | |
| Large 7 way male<br>Small 7 way female | E66066 | Used with DSM 300 and transducers<br>B117, P319, P79, B258, B744VL, B60 |
| Large 9 way male<br>Small 7 way female | E66070 | Used with the following transducers:<br>L365, L470 |

## 9.2 Spare parts

The following replacement spares are available

| Item | Part |
|---|---|
| A50/A57/A70 Power and NMEA Cable | R62157 |
| A50 / A50D Suncover | R62158 |
| A57D Suncover | R62159 |
| A70 / A70D Suncover | R62160 |
| A50/A57/A70 Quick Release Bracket | R62161 |
| Quick release bracket fixing pack<br>Includes screws and O-ring | R32113 |

Raymarine®

**Raymarine plc**
Anchorage Park, Portsmouth,
Hampshire, PO3 5TD, UK
Tel: +44 (0) 23 9269 3611
Fax: +44 (0) 23 9269 4642
**www.raymarine.com**

**Raymarine Inc.**
21 Manchester Street, Merrimack,
New Hampshire 03054 USA,
Tel: +1 603 881 5200
Fax: +1 603 864 4756
**www.raymarine.com**